SFP-1/10GB-SR-MX-C

Mellanox® Compatible TAA 1/10GBase-SR SFP+ Dual-Rate Transceiver (MMF, 850nm, 300m, LC, DOM)

Features:

- Supports Rate Selectable 1.25Gbps or 9.83Gbps to 11.3Gbps Bit Rates
- Compliant with IEEE 802.3-2012 10GBASE-SR/SW and 1000BASE-SX
- Compliant with SFF-8431
- Hot-Pluggable SFP+ Footprint
- 850nm VCSEL Laser Transmitter
- Duplex LC Connector
- Built-In Digital Diagnostic Functions
- Class 1 Laser
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free

Applications:

- 10GBase Ethernet

Product Description

This Mellanox® compatible SFP+ transceiver provides 1/10GBase-SR throughput up to 300m over multi-mode fiber (MMF) using a wavelength of 850nm via an LC connector. It can operate at temperatures between 0 and 70C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")

TAA COMPLIANT

Rev. 012026

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		4	V	1
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Data Rate (RS0 = Low)	DR		1.25		Gbps	2
Data Rate (RS0 = High)	DR	9.83	10.3125	11.3	Gbps	2
Bit Error Rate	BER			10^{-12}		

Notes:

1. For the electrical power interface.
2. IEEE 802.3-2012.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	Vcc	3.14	3.3	3.46	V	
Module Supply Current	Icc		180	300	mA	1
Transmitter						
Input Differential Impedance	RIN		100		Ω	
Differential Data Input Swing	VIN,pp	180		700	mVp-p	
Transmit Disable Voltage	VD	2		Host_Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver						
Differential Data Output Swing	VOUT,pp	300		850	mVp-p	
Data Output Rise/Fall Time (20-80%)	Tr/Tf	28			ps	
LOS Assert	VLOSA	2		Host_Vcc	V	
LOS De-Assert	VLOSD	Vee		Vee+0.5	V	

Notes:

1. For the electrical power interface.

Optical Characteristics RS0 = Low (1G Operation)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P_{TX}	-9.5		-1	dBm	1
Optical Center Wavelength	λC	840	850	860	nm	
Rise/Fall Time (20-80%)	Tr/Tf			300	ps	
Extinction Ratio	ER	9			dB	
Spectral Width (RMS)	Δλ			0.45	nm	
Relative Intensity Noise	RIN			-120	dB/Hz	
Transmitter Jitter	TJ					2
Launch Power of Off Transmitter	Poff			-30	dBm	3
Receiver						
Optical Center Wavelength	λC	840		860	nm	
Receiver Sensitivity @1.25Gbps	R_{X_SEN}			-17	dBm	4
Receiver Overload	P_{OL}	0.5			dBm	
Optical Return Loss	ORL	12			dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-18	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Class 1 Product.
2. According to IEEE 802.3-2012 requirements.
3. Average.
4. Measured with worst ER, BER<10^{-12}, and 2^7-1 PRBS.

Optical Characteristics RS0 = High (10G Operation)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P_{TX}	-5		-1	dBm	1
Optical Center Wavelength	λC	840	850	860	nm	
Optical Modulation Amplitude	OMA		-1.5		dBm	2
Extinction Ratio	ER	3	5.5		dB	
Spectral Width (RMS)	Δλ			0.45	nm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			3.9	dB	
Transmitter Jitter	TJ					3
Launch Power of Off Transmitter	Poff			-30	dBm	4
Receiver						
Optical Center Wavelength	λC	840		860	nm	
Receiver Sensitivity @10.3Gbps	R_{X_SEN}			-10	dBm	1
Receiver Overload	P_{OL}	0.5			dBm	
Receiver Reflectance	TR_{RX}			-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-14	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Class 1 Product.
2. IEEE 802.3-2012.
3. According to IEEE 802.3-2012 requirements.
4. Average.
5. Measured with worst ER, BER<10^{-12}, and 2^{31}-1 PRBS.

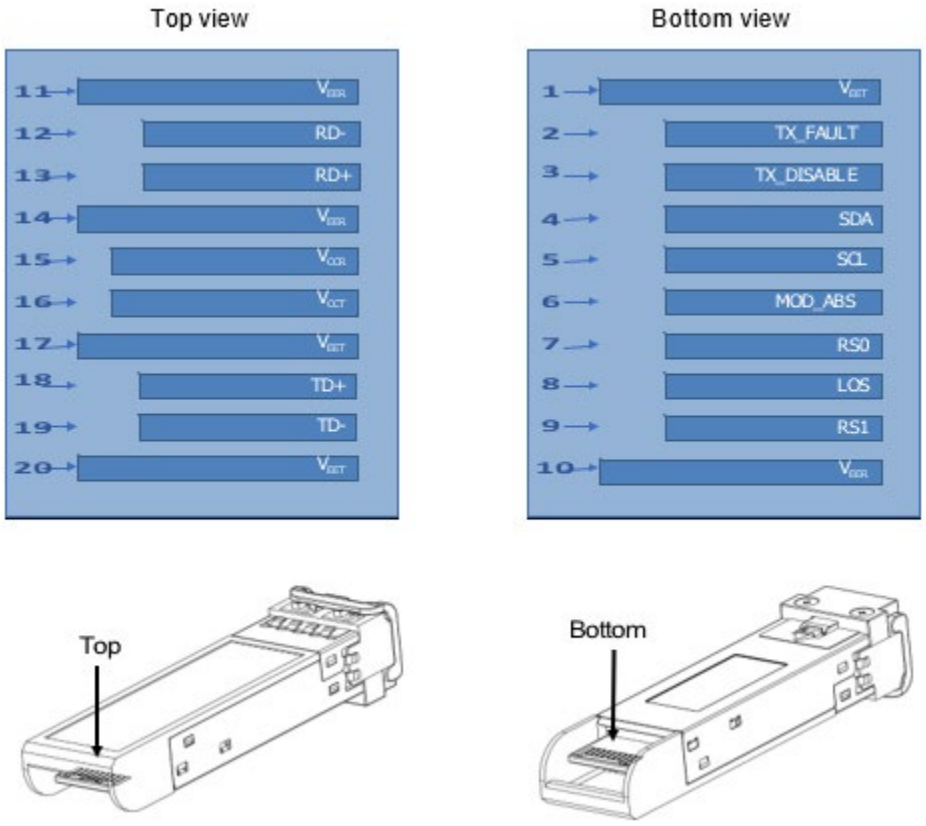
Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault.	
3	Tx_Disable	Transmitter Disable. Laser output disables on “high” or “open.”	2
4	SDA	2-Wire Serial Interface Data.	3
5	SCL	2-Wire Serial Interface Clock.	3
6	MOD_ABS	Module Absent. Grounded within the module.	3
7	RS0	Rate Selection.	
8	LOS	Loss of Signal Indication. “Logic 0” indicates normal operation.	4
9	RS1	No Connection Required.	1
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Inverse Receiver Data Out. AC Coupled.	
13	RD+	Received Data Out. AC Coupled.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Data In. AC Coupled.	
19	TD-	Inverse Transmitter Data In. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

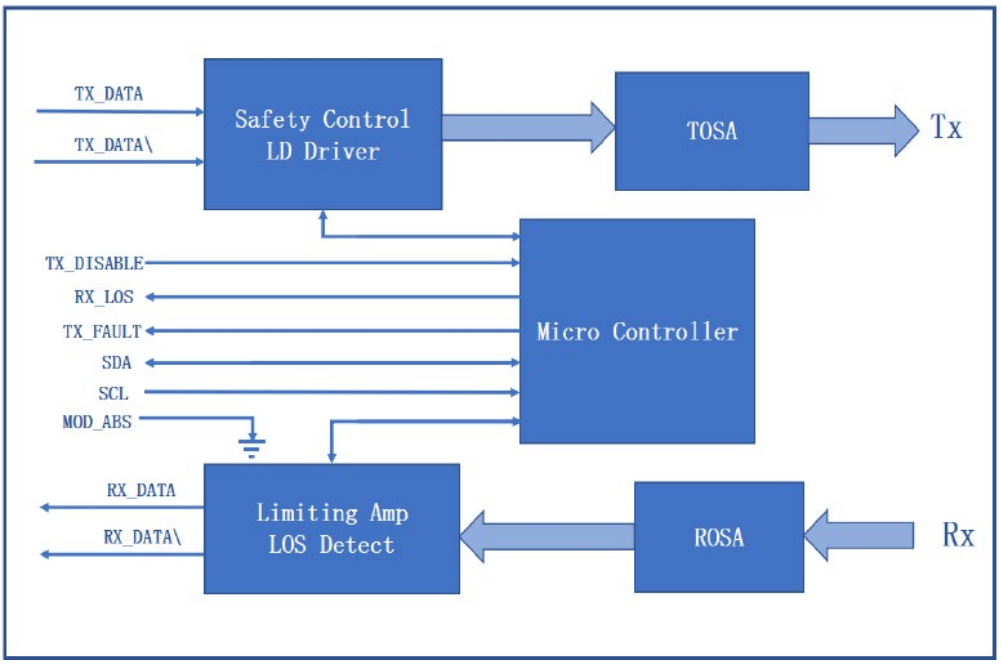
Notes:

1. The circuit ground is isolated from the chassis ground.
2. Disabled: T_{DIS}>2V or open. Enabled: T_{DIS}<0.8V.
3. Should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and Vcc+0.3V.
4. LOS is an open collector output.

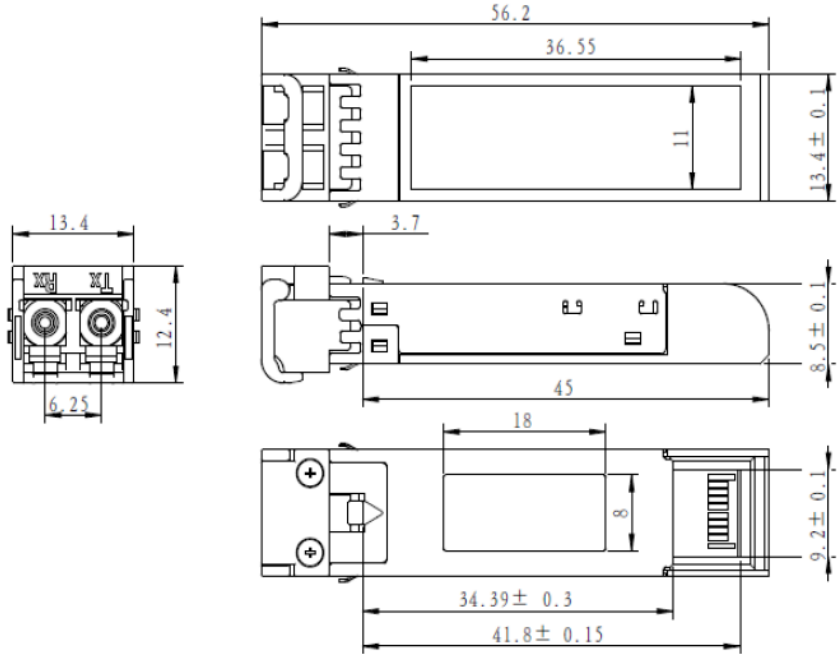
Electrical Pin-Out Details

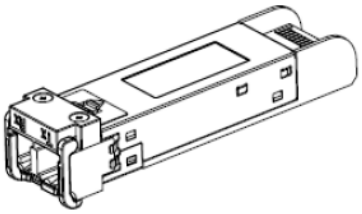


Block Diagram



Mechanical Specifications





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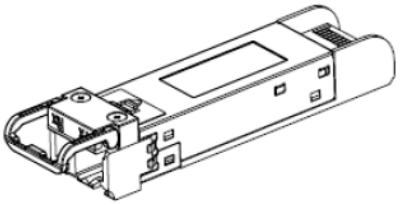

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About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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